the tributary vessels with which this area is pregnant and abundant invariably tearing the friable wall, and some hemorrhage resulted. The flow, however, in our judgment, was not as free as it should have been. Accordingly, after cleansing the field of operation with alcohol (95 per cent.) and sterile water, a bistoury was plunged into the vein and the wall incised along its anterior surface throughout its descending portion. The flow from above was profuse, so the distal end was plugged with iodoform gauze. The upward flow was obstructed by what was evidently a parietal thrombus. A curette was introduced and the lumen of the vessel carefully searched. (This is a practice which I do not now advocate, and in the light of later knowledge is in my opinion to be condemned as a dangerous and unscientific surgical procedure. The fact that the clot formation was not broken up and particles of the infected matter dropped into the circulation of the internal jugular, with a consequent septic process in the lung, and the formation of metastatic abscesses in other parts of the body, was an act of chance; and I ~~take no credit to myself for having subjected my patient to this~~ most uncertain element, even though he did make a recovery.) The wound was packed with gauze, using separate packings for each area, after the method suggested by Dench, of New York. One packing, a small narrow strip, was put into the antrum, which has not been infected from start to finish of the case; one strip into the area of the obliterated tip cell; and one, folded in the usual manner, into each of the sinus openings. The posterior incision was closed with sutures of silkworm gut. The original incision was not closed, the wound being left open to heal by granulation from the bottom. Recovery gradual, uneventful, and complete.

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# THE LYMPHATIC DRAINAGE OF THE PHARYNGEAL TONSIL.[1]

By George Bacon Wood, M.D.,
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(From the Laboratory of the Wistar Institute of Anatomy.)

To understand the drainage of the lymph from the pharyngeal tonsil it is necessary to briefly recall the arrangement of the substernomastoid lymph glands and the retropharyngeal lymph glands. Theoretically and also practically the upper deep cervical lymph glands may be divided into two groups, the external or posterior group and the internal jugular group. Anatomically these two sets of glands can scarcely be separated, as they are closely related by position and are connected by numerous lymphatic anastomoses. The glands of the internal jugular group receive the efferent lymph vessels from the superficial glands of the anterior part of the head and neck and also some of the primary lymphatics from the organs themselves. The external or posterior group receive the efferents from the mastoid and occipital glands and from the various structures posterior to the median line of the head and neck. This group of glands is placed directly under the sternocleidomastoid muscle just below the top of the mastoid bone, the glands being quite numerous, although small in size.

The retropharyngeal glands are one or more small inconstant structures placed between the posterior pharyngeal wall and the vertebral column, just below the body of the sphenoid bone. They are situated on both sides, displaced one-half inch or more laterally from the median line, and are bounded externally by the fibrous sheath surrounding the large vessels of the neck. These glands receive the lymphatics from the posterior part of the nasal fossa and the surrounding structures and also from the vault of the pharynx. According to Poirier the efferent vessels from the retropharyngeal glands pass to the internal jugular glands, but according to my own researches the drainage from the retropharyngeal glands is, primarily, to the external glands of the upper deep cervical group.

The technique of injecting the pharyngeal tonsil was essentially the same as that employed in making the injections of the faucial tonsils.[1] A mixture of Berlin blue and turpentine was injected with a very fine glass canula into the substance of the adenoid mass. After a lapse of a few hours the specimen was hardened in 10 per cent. formalin. I found it very difficult to inject the pharyngeal tonsil, because the delicate construction of this adenoid tissue permitted a rupture of the tonsil before there was sufficient pressure to make the injection fluid enter the lymph radicles. In about six trials I succeeded in getting only two good injections.

In the first a small retropharyngeal gland was present and was deeply injected. One gland of the posterior group of upper deep cervical glands was also injected, but the connecting lymph trunk was not found.

In the other the lymphatic vessel, after a careful dissection, was traced from its exit at the lower part of the pharyngeal tonsil to its entrance into a little gland of the posterior group of the upper deep cervical glands. The route of this lymph vessel is as follows:

Running posteriorly from the lower part of the pharyngeal tonsil, the vessel penetrates through the posterior pharyngeal wall entering the retropharyngeal space; then it runs downward and outward just below the insertion of the rectus capitis anticus major and between this muscle and the bodies of the cervical vertebræ; still running obliquely downward and outward, it passes beneath the sheath of the great vessels of the neck until it reaches a position almost opposite the posterior border of the sternocleidomastoid. It then turns directly outward and enters one of the small glands situated just below the tip of the mastoid along the posterior border of the sternocleidomastoid muscle (see illustration).

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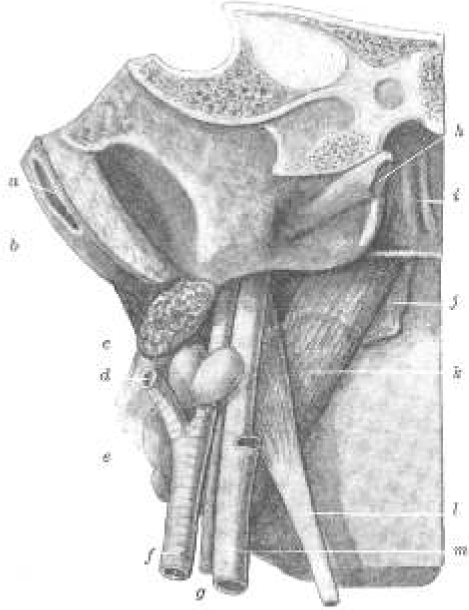
[1] American Journal of the Medical Sciences, August, 1905.

The clinical importance of this bit of anatomy of the lymphatic system, of course, concerns childhood much more than it does adult life, because the pharyngeal tonsil is essentially an organ of early life. The origin of the infection of a cervical adenopathy, if seen in its earlier stages, may very often be determined to a certain degree by noting the position of the glands first enlarged. The three most important sources of infection of the cervical lymph glands are the gums, the faucial tonsils, and the pharyngeal tonsil.



Dissection of the neck, showing the course of the efferent lymphatic from the pharyngeal tonsil to a lymph gland of the posterior group of the upper deep cervical glands. The drawing is somewhat diagrammatic so as to give a clear idea of the course of this lymph vessel. *a.* External auditory canal. *b.* Section through parotid gland. *c.* Insertion of sternocleidomastoid muscle. *d.* External carotid artery. *e.* Lymph gland receiving efferent from pharyngeal tonsil. *f.* Common carotid artery. *g.* Pneumogastric nerve. *h.* Cartilage of Eustachian tube. *i.* Pharyngeal tonsil. *j.* Lymphatic efferent from pharyngeal tonsil. *k.* Rectus capitis antici muscles. *l.* Stylopharyngeus muscle. *m.* Internal jugular vein.

Carious teeth, by inoculating the rich lymphatic network of the gums, may cause infections of the submaxillary lymph glands. It has never been positively proven that the pulp of the teeth roots possess any lymphatic vessels, though numerous attempts to inject them have been made. Therefore, the infection of the submaxillary glands, so frequent in dental caries, is most probably due to an erosion of the surrounding gum tissue.

The faucial tonsil drains its lymph into a gland which, when enlarged, is palpable just below and behind the angle of the jaw. This gland may be differentiated from the submaxillary glands by its freedom of motion posteriorly. It is true that the submaxillary glands may drain into this very same gland belonging to the internal group, but in cases of tooth infection the submaxillary glands are enlarged, as well as the tonsillar glands. Faucial tonsillitis causes an enlargement of this gland primarily. Subsequently it is possible for the lower glands of the deep cervical group to become involved.

Infections entering through the pharyngeal tonsil involve the lymph glands placed just beneath the posterior border of the sternocleidomastoid. The muscular covering of these glands sometimes makes it almost impossible to palpate them, so that the first distinct glandular node that may be perceptible to palpation is one on the anterior border of the muscle. Clinically, the enlargement of these glands may be diagnosed by a diffuse swelling over the upper part of the sternocleidomastoid muscle. This swelling is due to the enlargement of the glands underneath the muscle.

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# BELLADONNA POISONING DUE TO BELLADONNA PLASTERS.

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Scant consideration is given this subject by the text-books on therapeutics and the practice of medicine, but it is a subject of practical importance, owing to the common use of belladonna plasters. H. C. Wood says: "Constitutional symptoms are readily produced by the free external use of belladonna plasters or ointment, and patients should be warned always to remove the plasters if dryness of throat or disorders of vision come on." As these plasters are so often applied by the patient on his own initiative, serious symptoms of poisoning may develop before he comes under medical care, as in my first case, and even then the history may be such that no mention is made of the use of the plaster. The following case occurred in the medical service of Dr. Stengel in the Pennsylvania Hospital, and I am indebted to him for permission to report it:

Case I.—W. B., white, male, aged forty-seven years, brought to the hospital by the police. "On admission patient is wildly delirious and is continually tossing about, necessitating his being strapped in bed. Pupils are widely dilated and do not react to light. Patient has a diffuse erythematous eruption on chest and back; it